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10/825,616	04/16/2004	Yong Ho Jang	049128-5146	7873
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MCKENNA LONG & ALDRIDGE LLP			EXAMINER	
1900 K STREET, NW			TSEGAYE, DANIEL	
WASHINGTON, DC 20006			ART UNIT	PAPER NUMBER
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/825,616	Applicant(s) JANG ET AL.	
	Examiner DANIEL TSEGAYE	Art Unit 2609	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on Apr. 16, 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-25 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-9, 13-14, 16, 23-25 is/are rejected.
- 7) ☒ Claim(s) 10-12, 15, 17-22 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 16 April 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Objections

1. Claims 10-12, 15, 17-19 and 19-21 are objected to because of the following informalities: Appropriate correction is required.

As to claim 10, the fourth line "the first half-period clock signal" should be changed to "the second-half clock signal".

As to claim 12, the second line "the first clock signal" should be change to " the fourth clock signal".

As to claim 13, the second line "the first clock signal" should be changed to "the fourth clock signal" and the fourth line "the first half-period clock signal" should be changed to "the second-half clock signal".

As to claim 15, the second line "second half-period clock signal" should be changed to " the first half-period clock signal". The eight line "second half-period clock signal" should be changed to "the first half-period clock signal" and the ninth line " a source electrode" should be changed to "a drain electrode".

As to claim 17, the fifth line "the first half-period clock signal" should be changed to "the second-half clock signal".

As to claim 19, the third line " the third clock signal" should be changed to "the first clock signal".

As to claim 20, the fourth line, "the second clock signal" should be changed to "third clock signal".

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As to claim 21, the third line, "the third clock signal" should be changed to the first clock signal".

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 8 and 24-25 are rejected under 35 U.S.C. 112, second paragraph, as failing to set forth the subject matter which applicant(s) regard as their invention.

Claim 8, line 2 recite "the second clock signal". However, it is not clear whether the claimed information " the second clock signal" synchronized with the start pulse and the second-half clock signals.

Claim 24, line 14 recite the limitation of "charging the second discharge control node in response to the second clock signal". However, it is not clear whether the limitation "the second clock signal" part of the first stage.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1-9,13-14,16,22-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ishii (U.S P# 6,670,944) in view of Park (U.S Pub# 2004/0109526), further in view of Kanzaki (U.S Pat # 6,967,639).

As to claim 1, Ishii discloses a gate driving apparatus for a liquid crystal display, comprising: a shift register (1560) provided with first (e.g., CLX) and second half-period clock signals (e.g., CLX_{INV}) phases inverted with respect to each other (see Fig. 13), a start pulse (e.g., DX), a high-level supply voltage (e.g., VGG) and a low-level supply voltage (e.g., VSS). Ishii does not teach first to fourth one-period clock signals having phases shifted sequentially and each having a pulse width of one period. Park teaches first to fourth one-period clock signals having phases shifted sequentially and each having a pulse width of one period (see Fig. 10 and [0119]).

Therefore, it would have obvious to one of ordinary skill in the art at time the invention was made to have provided with first to fourth one-period clock signals having phases shifted sequentially and each having a pulse width of one period as taught by park to the elect optical device of Ishii because the thin transistor in the shift register of Park minimize the level of voltage in while reducing power dissipation (see [0023]).

Ishii and Park do not teach wherein the shift register generates a half-period output, and generates a one-period output at a half-period delay from an end time of the half-period output. Kanzaki teaches wherein the shift register generates a half-period output, and generates a one-period output at a half-period delay from an end time of the half-period output (see col. 6, lines 42-48).

Therefore, it would have obvious to one of ordinary skill in the art at time the invention was made to have provided with shift register generates a half-period output, and generates a one-period output at a half-period delay from an end time of the half-period output as taught by Kanzaki to the shift register of Ishii as modified by Park

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because it is possible to drive a display device having a multiplex pixel structure only with simple on or off signal and simplify the structure of a scan line drive circuit (see col.16 lines 66-67 and col. 17, lines 1-2).

As to claim 22, this claim differs from 1 only in that claim 1 is apparatus whereas claim 22 is method.

As to claim 4, this claim differs from 1 only in the limitations "first input circuit for charging a first charge control node" and "for charging a first discharge control node" are additionally recited. Park clearly teaches first input circuit (e.g., T1r and T2r) for charging a first charge control node (e.g., Q) and for charging a first discharge control node (e.g., QB, see [0089]).

As to claim 24, this claim differs from 4 only in that claim 4 is apparatus whereas claim 24 is method. In addition, claim 24 differs from 4 only the limitation "charging the second charge control node" and "charging the second discharge control node" are additionally recited. Park clearly teaches charging the second charge control node (e.g., QL, see [0162]), charging the second discharge control node (see Fig. 6, e.g., the node between T10r and T11r) also (see [0026]).

As to claim 2, Park teaches wherein the stages are connected in a cascade arrangement (see [0014]).

As to claims 3 and 23, Ishii teaches wherein any of the first (e.g., CLX) and second half-period clock signals (e.g., CLX_{INV}), any one of the first to fourth one-period clock signals (e.g., C2) and the start pulse are synchronized with each other (see Fig. 13).

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As to claim 5, note the discussion of Ishii and Park above in claim 24.

As to claim 6, Park teaches wherein the first input circuit (e.g., T1r and T2r), the first output circuit (e.g., T6r), the second input circuit and the second output circuit are included in each of a plurality of stages (see [0025]).

As to claim 7, Park teaches wherein the start pulse is applied to first stage of the plurality of stages (see [0026]).

As to claim 8, Ishii teaches wherein the second half-period clock signal (e.g., CLX_{INV}), the second clock signal (e.g., CLX) and start pulse (e.g., DX) are synchronized with each other (see Fig. 13).

As to claim 9, Park teaches wherein the first input circuit (e.g., T1r and T2r) for charging the first charge control node (e.g., Q) (see Fig. 6). Ishii teaches an inverter (1590) and also the limitation a half-period delay from the end time of the start pulse in response to the start pulse (e.g., DX) and the first half-period clock signal (e.g., C1) (see Fig. 11).

As to claim 13, Park teaches a sixth transistor (e.g., T4r) having a gate electrode supplied with first clock signal (e.g., C3) and a source electrode supplied with a high-level supply voltage (e.g., VDD); and

A seventh transistor having a gate electrode supplied with the first half-period clock signal (e.g., SP), a source electrode connected to a drain electrode of the sixth transistor, and drain electrode connected to the first discharge control node (e.g., QL) (see Fig.6).

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As to claim 14, Park teaches an eighth transistor (e.g., T13r) having a gate electrode supplied with start pulse (e.g., Sp), a drain electrode supplied with a low-level supply voltage (e.g., VSS), and a source electrode connected to the first discharge control node (e.g., QL); and

A ninth transistor (e.g., T8r) having a drain electrode supplied with a low-level supply voltage (e.g., VSS), a gate electrode connected to the output node (e.g., LO1) and a source electrode connected to the first discharge control node (e.g., QL) (see Fig.6).

As to claim 16, this claim differs from 9 only the limitation "an inverter for charging the second charge control node". Park teaches an inverter (e.g., T10r) for charging the second charge control node (e.g., QL) (see [0084])

As to claim 25, Ishii teaches wherein the first half-period clock signal (e.g., CLX), the second clock signal (e.g., CLX_{INV}) and the start pulse (DX) are synchronized with each other (see Fig.13).

Allowable Subject Matter

5. Claims 10-12, 15, 17-21 objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims and overcome the objection under 37.C.F.R 1.75.

Conclusion

6. The prior art made or record and not relied upon is considered pertinent to applicant's disclosure.

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Jeon (U.S. Pub #2004/0090412 and Moon (U.S. Pat #7,106,292) are cited to teach shift register and clock signals.


Inquiry

Any inquiry concerning this communication or earlier communications from the examiner should be directed to DANIEL TSEGAYE whose telephone number is 571 270-1715. The examiner can normally be reached on Monday-Friday, 8:00:00 EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, CHANH NGUYEN can be reached on 571 272 7772. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Daniel Tsegaye
04/16/2007


CHANH D. NGUYEN
SUPERVISORY PATENT EXAMINER